WE CLAIM:

-1-

A method for determining fluid pressure within a living animal containing the fluid under pressure which comprises:

(a) providing a wireless capacitive MEMS chip sensor comprising an inductance coil (L) and spaced apart capacitor (C) plates as a inductive- capacitive (LC) circuit, optionally with an antenna externally of the sensor, with the fluid in the animal in pressure contact with one of the capacitive plates;

(b) inducing a mutual inductance as an external signal into the sensor to produce a resonant frequency response as an internal signal from the sensor; and

(c) determining the fluid pressure within the animal externally of the animal from the internal signal as a function of the resonant frequency response from the sensor resulting from a change in capacitance of the sensor due to a variation in the spacing of the plates produced by the fluid pressure.

-2-

The method of Claim 1 wherein the plate in contact with the fluid is a P++ doped silicon membrane.

-3-

The method of Claims 1 or 2 wherein the coil is deposited on a substrate by sputtering and/or electroplating.

-4-

The method of Claim 1 wherein the antenna receives the external signal and transmits back the internal signal for the determining externally of the animal for determining the fluid pressure.

-5-

The method of Claim 4 wherein the antenna is part of the inductance coil and is spaced away from the capacitor (C) plates.

-6-

The method of Claim 1 wherein a temperature reading is determined by an element in the sensor in the animal based upon the signal.

-7-

The method of Claim 6 wherein the element is a series resistance in the circuit wherein a response of the resistance changes as a function of temperature in the animal due to a change of frequency as a function of the temperature.

-8-

A system for detecting increased fluid pressure in an animal which comprises:

(a) a sensor comprising a wireless capacitive MEMS chip sensor comprising an inductance coil (L) and spaced apart capacitor (C) plates as a inductive capacitive (LC) circuit, optionally with an antenna externally of the sensor, with the fluid in the animal with one of the capacitive plates; and

(b) a mutual inductance producing device which measures a resonant frequency response of the sensor as an internal signal produced by the inductance device as an external signal relative to the animal, wherein the increased pressure of the fluid in the animal is detected over time as a result from a change in capacitance of the sensor due to a variation of the spacing of the plates produced by the fluid pressure; and

(c) means for externally monitoring the fluid pressure in the animal as a function of the external signal.

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The system of Claim 8 wherein the antenna receives the external signal from the monitoring means and transmits back the internal signal externally of the animal to the monitoring means for determining the fluid pressure.

-10-

The system of Claim 9 wherein the antenna is part of the inductance coil and is spaced away from the capacitor (C) plates.

-11-

The system of Claim 8 wherein an element is provided in the sensor to determine a fluid temperature in the animal.

-12-

The system of Claim 11 wherein the element is a series resistance in the circuit wherein a response of the resistance changes as a function of the temperature in the animal due to a change of frequency as a function of the temperature.

-13-

The system of Claim 8 wherein the means for monitoring includes memory means for storing a series of pressure determinations for several animals.

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The system of Claim 13 wherein the memory means is a computer.

-15-

A method for determining fluid pressure within an eyeball containing the fluid under pressure which comprises:

(a) providing a wireless capacitive MEMS chip sensor comprising an inductance coil (L) and spaced apart capacitor (C) plates as a inductive- capacitive (LC) circuit, optionally with an antenna externally of the sensor, with the fluid of the eye in contact with one of the capacitive plates;

(b) inducing a mutual inductance as an external signal into the sensor to produce a resonant frequency response as an internal signal from the sensor; and

(c) determining the fluid pressure within the eyeball externally of the eyeball from the internal signal as a function of the resonant frequency response from the sensor resulting from a change in capacitance of the sensor due to a variation in the spacing of the plates produced by the fluid pressure in the eyeball.

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The method of Claim 15 wherein the plate in contact with the fluid is a P++ doped silicon membrane.

-17-

The method of Claims 15 or 16 wherein the coil is deposited on a substrate by sputtering and/or electroplating.

-18-

The method of Claims 15 or 16 wherein the sensor is implanted in the vitriol chamber adjacent to the cornea of the eyeball.

-19-

The method of Claims 15 or 16 wherein the sensor is implanted in the aqueous chamber adjacent to the cornea of the eyeball.

-20-

The method of Claim 15 wherein the pressure of the fluid is between about 10 and 20 mm of Hg (1333 to 2666 Pascal) for normal pressure of the fluid and between about 20 and 80 mm of Hg (2666 to 10,666 Pascal) for glaucoma.

-21-

The method of Claim 15 wherein the sensor has an antenna which receives the external signal and transmits back the internal signal externally of the eyeball for determining the fluid pressure.

-22-

The method of Claim 15 wherein a temperature reading is determined by an element in the sensor in the eyeball.

-23-

The method of Claim 22 wherein the element is a series resistance in the circuit wherein a response of the resistance changes as a function of temperature in the eyeball due to a change of frequency as a function of the temperature.

-24-

A system for detecting increased fluid pressure and thus glaucoma of the eye which comprises:

(a) providing a wireless capacitive MEMS chip sensor comprising an inductance coil (L) and spaced apart capacitor (C) plates as a inductive capacitive (LC) circuit, optionally with an antenna externally of the sensor, with the fluid of the eye in contact with one of the capacitive plates; and

(b) a mutual inductance producing device which measures a resonant frequency response of the sensor as an internal signal produced by the inductance device as an external signal relative to the eyeball, wherein the increased pressure of the fluid in the eyeball is detected results from

a change in capacitance of the sensor due to a variation of the spacing of the plates produced by the fluid pressure in the eyeball;

(c) means for externally monitoring the fluid pressure in the eyeball as a function of the external signal.

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The system of Claim 24 wherein the antenna receives the external signal from the monitoring means and transmits back the internal signal externally of the eyeball to the monitoring means for determining the fluid pressure.

-26-

The system of Claim 24 wherein an element is provided in the sensor to determine fluid temperature in the eyeball.

-27-

The system of Claim 25 wherein the element is a series resistance in the circuit, wherein a response of the resistance changes as a function of the temperature of the fluid eyeball due to a change of frequency as a function of temperature.

-28-

The system of Claim 24 wherein the means for monitoring also includes an atmospheric pressure sensor, so that a pressure in the eyeball can be determined relative to the atmospheric pressure.

-29-

The system of Claim 24 wherein the means for monitoring includes memory means for storing a series of eye pressure determinations for several patients.

The system of Claim 29 wherein the memory means is a computer.

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A method for determining fluid pressure within an environment containing the fluid under pressure which comprises:

(a) providing a wireless capacitive MEMS chip sensor comprising an inductance coil (L) and spaced apart capacitor (C) plates as a inductive- capacitive (LC) circuit, optionally with an antenna externally of the sensor, with the fluid in the environment in pressure contact with one of the capacitive plates;

(b) inducing a mutual inductance as an external signal into the sensor to produce a resonant frequency response as an internal signal from the sensor; and

(c) determining the fluid pressure within the environment externally of the environment from the internal signal as a function of the resonant frequency response from the sensor resulting from a change in capacitance of the sensor due to a variation in the spacing of the plates produced by the fluid pressure in the environment.

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A system for detecting increased fluid pressure in an environment which comprises:

(a) a sensor comprising a wireless capacitive MEMS chip sensor comprising an inductance coil (L) and spaced apart capacitor (C) plates as a inductive capacitive (LC) circuit, optionally with an antenna externally of the sensor, with the fluid in the environment in pressure contact with one of the capacitive plates; and

(b) a mutual inductance producing device which measures a resonant frequency response of the sensor as an internal signal produced by the inductance device as an external signal relative to the environment, wherein the pressure of the fluid in the environment is detected over time as a result from a change in capacitance of the sensor due to a variation of the spacing of the plates produced by the fluid pressure; and

(c) means for externally monitoring the fluid pressure in the environment as a function of the external signal.

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The method of Claim 1 wherein an intermediate unit (IU) is provided on the animal outside of the eye to receive and then transmit the signals from the sensor to a remote data acquisition and processing unit (DAP).

-34-

The system of Claim 8 wherein an intermediate unit (IU) is provided on the animal outside of the eye to receive and then transmit the signals from the sensor to a remote data acquisition and processing unit (DAP).

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The method of Claim 15 wherein an intermediate unit (IU) is provided on the animal outside of the eye to receive and then transmit the signals from the sensor to a remote data acquisition and processing unit (DAP).

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The system of Claim 24 wherein an intermediate unit (IU) is provided on the animal outside of the eye to receive and then transmit the signals from the sensor to a remote data acquisition and processing unit (DAP).

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The method of Claim 31 wherein an intermediate unit (IU) to receive and then transmit signals from the sensors to a remote data acquisition and processing unit (DAP) is provided adjacent to and outside of the fluid.